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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,097	08/31/2000	Mark Richard Shaw	13DV13495	2850

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EXAMINER	
STEVENS, THOMAS H	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/652,097	SHAW ET AL.	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 9-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7 and 9-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-3,6-7, 9-12 were examined.

2. Claims 5,8,13-19 were canceled.

3. Claims 1-4,7,9-12 were examined.

Section I: Final Office Action (4th Office Action)

Claim Objection

4. Claims 7,9-12 are objected by the use of the word "system". Dictionary.com defines system as " *A group of interacting, interrelated, or interdependent elements forming a complex whole",* thus rendering the statutory type ambiguous since a system could be a method and or apparatus.

Claim Rejections - 35 USC § 112

5. Claims 1-4,7,9-12 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The specification fails to detail how the regression equation, for example, is computed; there little of no explanation of the what the equation consist of nor what numerical values or limits the regression equation requires (applicants' response, pgs.4-5):

The stiffness multiplier is determined 120 with a regression equation that accounts for tube sub-system diameter 37 and 38, system operating pressure, bellows pitch 80, and dynamic operating inputs. The regression equation is based on dynamic

stiffness test data obtained as a result of testing several different shrouded bellow configurations. Each different shrouded bellows configuration can be analytically modeled to determine a unique stiffness multiplier for that specific shrouded bellows configuration and to generate a tube sub-system analytical model.

Furthermore, on page 5, lines 11-15, fail to disclose what the "interactive scheme" is or what the "flexibility factors" are. Summarily, an individual reading the disclosure cannot arithmetically enable this process.

Claim Rejections - 35 USC § 103

6. Claims 1-3,6-7, 9-12 are rejected under 35 U.S.C. 103 (a) as unpatentable by Rosemount™ Inc. (Technical Data Sheet "Pressure Fundamentals and Transmitter Selection" 1998), in view of Broman et al. ("Modeling Flexible Bellows by Standard Beam Finite Elements" 1999).

Rosemount™ Inc. teaches the fundamentals of pressure measurement as they relate to industry, and factors that should be considered in selecting a pressure transmitter inside mechanical elements (pg. 2, introduction; and pg. 5, bellow elements). Although, Rosemount teaches the applicable physics behind theses devices in relation to pressure flow, it doesn't teach applying these properties to modeling/simulation.

Broman et al. teaches modeling flexible bellows by standard beam finite elements by way of the *I-DEAS Master Series 6* modeling software (pg. 9, 4th paragraph, line 3).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use Broman et al. to modify Rosemount™ Inc. since modeling bellows dynamic behavior can be modeled by element beams that's reduced by a factor of 100-1000 which is advantageous when the bellows is only a part of an exhaust system to be optimized with respect to overall design parameters (Broman: pg. 38, lines 7-8).

Claim 1: A computer-implemented method for predicting natural frequency (Rosemount: pg. 5, left column, 2nd paragraph & equation) responses said method comprising the steps of: providing at least one tube sub-system including a plurality of shrouded bellows components; determining a stiffness multiplier within each of the shrouded bellows components from input values; inputting the determined stiffness multiplier in a computer model (Broman: title and pg. 18, lines 10-11) that applies a standard geometry element and flexibility factor based upon the stiffness multiplier to predict a natural frequency response, and determining location for duct supports.

Claim 2: A method in accordance with Claim 1 further comprises the step of inputting dynamic system operating inputs into the model (Broman: pgs 4-5, notations; and Rosemount: pg. 4, right column, 1st paragraph and 2nd paragraph, lines 9-12).

Claim 3: A method in accordance with Claim 2 wherein said step of inputting dynamic system (Broman: pgs 4-5, notations; and Rosemount: pg. 4, right column, 1st paragraph and 2nd paragraph, lines 9-12) operating inputs further comprises the step of inputting at

least an operating pressure and vibratory environment into the model (Broman: pg. 24, paragraphs 2 and 3).

Claim 6: A method in accordance with Claim 3 (Broman: pgs 4-5, notations; and Rosemount: pg. 4, right column, 1st paragraph and 2nd paragraph, lines 9-12) further comprising the step of determining system stiffness as a function of the stiffness multiplier (Rosemount: pg. 5, natural frequency equation; and Broman: pg 13, section 3.3 Axial Vibrations).

Claim 7: A modeling system for determining natural frequency response of shrouded bellows components, said system comprising a processor configured to determine a stiffness multiplier from input values (Rosemount: pg. 5, natural frequency equation, pg. 24, section 4.6 Summary of Modeling Procedure; and Broman: pg 13, section 3.3 Axial Vibrations).

Claim 9: A modeling system in accordance with Claim 8 (Rosemount: pg. 5, natural frequency equation, pg. 24, section 4.6 Summary of Modeling Procedure, pg. 31 2nd paragraph; and Broman: pg 13, section 3.3 Axial Vibrations) wherein the input values include at least one of shrouded bellows geometry inputs and dynamic operating condition inputs (Broman: pg. 31-35, section 4.7.2, Specimen from Ting-Xin et al.).

Claim 10: A modeling system in accordance with Claim 8 (Rosemount: pg. 5, natural frequency equation, pg. 24, section 4.6 Summary of Modeling Procedure, pg. 31 2nd paragraph; and Broman: pg 13, section 3.3 Axial Vibrations) wherein the bellows geometry inputs include at least one of a tube (Bronman: pg. 18, 2nd paragraph and figure 3.6) sub-system diameter and a bellows pitch.

Claim 11: A modeling system in accordance with Claim 8 (Rosemount: pg. 5, natural frequency equation, pg. 24, section 4.6 Summary of Modeling Procedure, pg. 31 2nd paragraph; and Broman: pg 13, section 3.3 Axial Vibrations) wherein the dynamic operating condition inputs include at least an operating pressure (Broman: pg.26, section 4.7.1, Geometry and material properties (*E*)).

Claim 12: A modeling system in accordance with Claim 8 (Rosemount: pg. 5, natural frequency equation, pg. 24, section 4.6 Summary of Modeling Procedure, pg. 31 2nd paragraph; and Broman: pg 13, section 3.3 Axial Vibrations) wherein the stiffness multiplier is adjustable such that a dynamic stiffness of the shrouded bellows is selectively variable.

Section II: Response to Applicants' Arguments (3rd Office Action)

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9. Applicants are thanked for addressing this issue. Applicants response is non-persuasive since the description is the stiffness multiplier is a mere "listing" of what is associated with; one cannot solve a solution since the application is silent on the

specifics of the empirical data is to be used or extracted. Applicants arguments is circular by stating the *"method can be practice on a computer such as a personal computer or workstation"* (applicants' response, page 5, lines 13-15) then states *"The particular arithmetic or software solution is not claimed and the method includes steps that collect data from a dynamic stiffness test, which does not lend itself to an arithmetic or software process"* (applicants' response, page 7, lines 2-5).

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10. Applicants are thanked for addressing this issue. Examiner acknowledges and amends the motivation statement.

In response to applicant's argument that the Rosemount reference does not describe a bellows designed to joint two components in a fluid flow system (applicants' response, page 7, lines 17-19) the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies on are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants state neither reference describes a method to model a shrouded bellow assembly. In response to applicant's arguments against the references

individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicants state neither art discloses how to determining a stiffness multiplier. In light of the 112 1st rejection, the applicant merely *lists* the source of where the stiffness multiplier that originates from, i.e., the regression equation which originates from dynamic test data which originates from several different shrouded bellow configurations with little or no detail as to the numerical limits or values one would observer during each process. Furthermore, the applicants state that the Broman (Modeling Flexible Bellows) reference does suggest a stiffness multiplier. Broman does teach a stiffness equation on page 17, part of a detailed arithmetic.

Rejection stands.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Leo Picard at (571) 272-3749. Central Fax number is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

September 1, 2005

Paul L. Rodriguez 9/19/05

Primary Examiner
Art Unit 2125

THS